University of Southern California
VITERBI SCHOOL OF ENGINEERING

Master of Science in Mechanical Engineering (Energy Conversion)
Program Learning Objectives

The Master of Science in Mechanical Engineering (Energy Conversion) prepares students to apply fundamental thermodynamic principles to modern energy systems, with an emphasis on efficiency and environmental stewardship. The program prepares students to practice engineering at an advanced level with a specialization within mechanical engineering and to recognize the benefit of solving problems using expertise from other engineering disciplines. Students improve their skills in setting up and solving problems by using contemporary tools and leveraging interaction with peers.

The Master of Science in Mechanical Engineering (Energy Conversion) program in the Department of Aerospace & Mechanical Engineering is designed to satisfy the following learning objectives:

a. to provide breadth of knowledge to further an awareness of the interdisciplinary nature of mechanical engineering;

b. to provide depth of knowledge in a particular field of study;

c. to further develop the ability to formulate problems, to synthesize and integrate information, to work collaboratively, and to communicate effectively;

d. to educate students in methods of advanced analysis and the use of tools appropriate to an increasingly complex field; and

e. to prepare students for successful careers regardless of the path they follow.

The master's degree programs with special emphasis have additional learning objectives:

MSME (Energy Conversion):
to apply fundamental thermodynamic principles to modern energy systems, with an emphasis on efficiency and environmental stewardship.

MSME (Nuclear Power):
to prepare students with a fundamental and applied education for peaceful use of nuclear power considering reactor technology, nuclear safety, and the effects of radiation on health.

MSAME (Dynamics and Controls):
to provide students with the knowledge and tools necessary for the analysis of complex aerospace and mechanical systems and design of control systems for such systems.

MSAME (Computational Fluid and Solid Mechanics):

to introduce students to the computational techniques and tools used in the analysis and design of systems involving complex flows and solid structures.